

**We Claim:**

1. A structure for retaining and reinforcing an earthen formation and securing a face of the formation against sloughing, said structure comprising:
  - 5 a) successive welded wire soil reinforcing mats embedded in the formation at vertically spaced intervals, each said reinforcing mat being planar and comprised of spaced longitudinal wires extending into the formation and transverse wires extending across and welded to the longitudinal wires at spaced intervals, said mats terminating at the face of the formation, with one of said transverse wires extending across the face; and
  - 10 b) a welded wire face mat disposed at the face of the formation between each successive pair of soil reinforcing mats, each of said face mats comprising transverse wires at upper and lower portions thereof and spaced generally vertical wires welded to and extending across the transverse wires, the generally vertical wires of each
  - 15 c) successive face mat extending distally therefrom to provide fingers extending over transverse wires of the next successive face mat and behind the transverse wire of the soil reinforcing mat extending across the face between the successive mats.
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- 25 2. A structure according to Claim 1 wherein:
  - a) the successive soil reinforcing mats comprise a lowermost soil reinforcing mat, an uppermost soil reinforcing mat, and at least one intermediate soil reinforcing mat disposed between the lowermost and uppermost soil reinforcing mats; and
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5 b) the face mat disposed between the lowermost soil reinforcing mat and the intermediate soil reinforcing mat immediately thereabove includes distally extending fingers hooked behind the transverse wire of the lowermost soil reinforcing mat which extends across the face.

10 3. A structure according to Claim 1 wherein:

15 a) the successive soil reinforcing mats comprise a lowermost soil reinforcing mat, an uppermost soil reinforcing mat, and at least one intermediate soil reinforcing mat disposed between the lowermost and uppermost soil reinforcing mats; and

20 b) the face mat disposed between the uppermost soil reinforcing mat and the intermediate mat immediately therebelow includes distally extending fingers hooked behind the transverse wire of the uppermost soil reinforcing mat which extends across the face.

25 4. A structure according to Claim 1 wherein each successive soil reinforcing mat rests on a transverse wire of the face mat immediately therebelow.

30 5. A structure according to Claim 4 further comprising compressible support members interposed between the soil reinforcing mats and the transverse wires of the face mats upon which the soil reinforcing mats rest.

6. A structure according to Claim 4 wherein a transverse wire of each face mat is supported in spaced relationship to the soil reinforcing mat immediately therebelow by a frangible member adapted to release responsive to overloading.

7. A structure according to Claim 6 wherein the frangible member comprises a body having bifurcated ends engaged, respectively, with wires of each face mat and a wire of the soil reinforcing mat immediately therebelow.  
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8. A structure according to Claim 1 wherein at least certain of the face mats disposed between successive soil reinforcing mats are comprised of paired separate face mat elements secured one above the other in edge-to-edge relationship.  
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9. A structure according to Claim 8, further comprising:
  - a) face stabilizing anchors embedded in the formation intermediate said at least certain successive soil reinforcing mats; and,  
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  - b) means securing the paired separate face mat elements to the stabilizing anchors.
10. A structure according to Claim 9 wherein:
  - a) the face stabilizing anchors comprise welded wire gridworks extending into the formation to a depth of one-half or less than that to which the reinforcing mats extend into the formation; and,  
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  - b) the means securing the face mat elements to the stabilizing anchors comprise a transverse wire on each gridwork engaged over the face mat elements.  
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11. A structure according to Claim 8 wherein the paired face mat elements are secured in edge-to-edge relationship by fingers extending from the respective elements in interdigitating relationship to one another.  
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12. A structure for retaining and reinforcing an earthen formation and securing a face of the formation against sloughing, said structure comprising:

5       a) successive soil reinforcing mats embedded in the formation at vertically spaced intervals, each said reinforcing mat being planar and comprised of spaced longitudinal elements extending into the formation and transverse elements secured to and extending across and the longitudinal elements at spaced intervals;

10       b) welded wire face mats disposed at the face of the formation between the successive soil reinforcing mats, at least certain of the face mats disposed between successive soil reinforcing mats being comprised of paired separate face mat elements secured one above the other in edge-to-edge relationship;

15       c) face stabilizing anchors embedded in the formation intermediate said at least certain successive soil reinforcing mats;

20       d) means securing the reinforcing mats to the face mats; and,

25       e) means securing the paired separate face mat elements to the stabilizing anchors.

13. A structure according to Claim 12, wherein:

30       a) one of the transverse elements of at least certain of the soil reinforcing mats is disposed at the a distal end of the mat and extends across the face; and,

      b) the means securing said at least certain soil reinforcing mats to the face mats comprises extensions on the face

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mats engaged behind the transverse elements at the distal ends of said certain soil reinforcing mats.

14. A structure according to Claim 12 wherein:
  - 5 a) the face stabilizing anchors comprise welded wire gridworks extending into the formation to a depth of one-half or less than that to which the reinforcing mats extend into the formation; and,
  - 10 b) the means securing the face mat elements to the stabilizing anchors comprise a transverse wire on each gridwork engaged over portions of the separate face mat elements.
15. A structure according to Claim 12 wherein the paired separate face mat elements are secured in edge-to-edge relationship by fingers extending from each respective element and over the other element in interdigitating relationship to one another.
16. A structure for retaining and reinforcing an earthen formation and securing a face of the formation against sloughing, said structure comprising:
  - 20 a) successive welded wire soil reinforcing mats embedded in the formation at vertically spaced intervals, each said reinforcing mat being planar and comprised of spaced longitudinal wires extending into the formation and transverse wires extending across and welded to the longitudinal wires at spaced intervals, said longitudinal wires terminating at the face of the formation, with one of said transverse wires extending across the face;
  - 25 b) a welded wire face mat disposed at the face of the formation between each successive pair of soil reinforcing

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mats, each of said face mats comprising transverse wires at upper and lower portions thereof and spaced generally vertical wires welded to and extending across the transverse wires, wherein each successive soil reinforcing 5 mat rests on a transverse wire at the upper portion of the face mat immediately therebelow; and,

c) means securing the reinforcing mats to the face mats.

17. A structure according to Claim 16 further comprising a 10 compressible support member interposed between the soil reinforcing mats and the transverse wires of the face mats upon which the soil reinforcing mats rest..

18. A structure according to Claim 16 wherein a transverse wire of 15 each face mat is supported in spaced relationship to the soil reinforcing mat immediately therebelow by a frangible member adapted to release responsive to overloading.

19. A structure according to Claim 18 wherein the frangible member 20 comprises a body having bifurcated ends engaged, respectively, with wires of each face mat and a wire of the soil reinforcing mat immediately therebelow.

20. A method for retaining and reinforcing an earthen formation and 25 securing a face of the formation against sloughing, said method comprising:

a) placing a first welded wire soil reinforcing mat in a generally horizontal disposition at a foot portion of the formation, said reinforcing mat being planar and comprised 30 of spaced longitudinal wires extending into the formation and transverse wires extending across and welded to the

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longitudinal wires at spaced intervals, said longitudinal wires terminating at the face of the formation, with one of said transverse wires extending across the face;

5           b) securing a first welded wire face mat behind the transverse wire of the first soil reinforcing mat extending across the face of the formation, said face mat having uppermost and lowermost transverse wires and spaced generally vertical wires welded to and extending across the transverse wires;

10           c) supporting the first face mat in a generally vertical disposition;

              d) backfilling and compacting soil over the first soil reinforcing mat and against the first face mat;

              e) placing a second welded wire soil reinforcing mat on the

15           backfilled soil in a generally horizontal disposition with one end thereof engaged with the first face mat to restrain the first face mat against outward displacement, said second soil reinforcing mat being planar and comprised of intersecting longitudinal and transverse wires, with one

20           transverse wire extending across the face;

              f) securing a second welded wire face mat behind the transverse wire of the second soil reinforcing mat extending across the face of the formation, said face mat having uppermost and lowermost transverse wires and spaced generally vertical wires welded to and extending

25           across the transverse wires thereof;

              g) supporting the second face mat in a generally vertical disposition;

              h) backfilling and compacting soil over the second soil

30           reinforcing mat and against the second face mat; and,

5 i) placing a third welded wire soil reinforcing mat on the soil backfilled over the second soil reinforcing mat so that one end of the third soil reinforcing mat is engaged with the second face mat to restrain the second face mat against outward displacement, said third soil reinforcing mat being planar and comprised of intersecting longitudinal and transverse wires, with one transverse wire extending across the face and in front of the second face mat.

10 21. A method according to Claim 20, further comprising providing fingers which extend distally from an upper edge of the first face mat and a lower edge of the second face mat, the fingers of the respective first and second face mats interdigitating in overlapping relationship when the second face mat is secured behind the transverse wire of the second soil reinforcing mat.

15 22. A method according to Claim 21 wherein:

20 a) the fingers of the first face mat are inclined toward the formation and extend over the lowermost transverse wire of the second face mat;

25 b) the fingers of the second face mat are inclined toward the formation and extend over the uppermost transverse wire of the first face mat;

30 c) upon securing the second face mat behind the transverse wire of the first face mat the fingers on the first and second face mats function to incline the second face mat toward the formation; and,

d) backfilling of soil over the second soil reinforcing mat and compacting the soil against the second face mat functions to move the second face mat to a generally vertical disposition.

23. A method according to Claim 20, further comprising interposing compressible support members between the first soil reinforcing mat and the first face mat and between the second soil reinforcing mat and the second face mat.  
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24. A method according to Claim 20, further comprising supporting the first face mat in spaced relationship to the first soil reinforcing mat and the second face in spaced relationship to the second soil reinforcing mat by frangible support members.  
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25. A method according to Claim 20 wherein the first face mat comprises paired separate face mat elements secured one above the other in edge-to-edge relationship at a level intermediate the uppermost and lowermost transverse wires of the first face mat; and the method further comprises embedding a face stabilization anchor in the backfill intermediate the first and second soil reinforcing mats and securing the anchor to the paired face mat elements to maintain the elements in generally vertically aligned relationship.  
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26. A method according to Claim 25 wherein the face stabilizing anchor comprises a welded wire gridwork extending into the backfill to a depth of one-half or less than that to which the second reinforcing mat extends into the backfill.  
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27. A method according to Claim 25 wherein the backfilling and compacting of soil over the first soil reinforcing mat and against the first face mat is carried out in steps to first fill and compact soil to said intermediate level and then fill and compact soil to a  
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level generally commensurate with that of the uppermost transverse wire of the first face mat.